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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,670	07/03/2006	Stephen Moreton	0068905-000267	3701

23464 7590 09/30/2010  
BUCHANAN INGERSOLL & ROONEY PC  
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ALEXANDRIA, VA 22313-1404

EXAMINER
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KILPATRICK, BRYAN T

ART UNIT	PAPER NUMBER
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1797

NOTIFICATION DATE	DELIVERY MODE
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09/30/2010

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/549,670  
Filing Date: July 03, 2006  
Appellant(s): MORETON, STEPHEN

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Duane A. Stewart III  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 28 July 2010 appealing from the Office action mailed 31 December 2009.

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

Instant claims 1 and 4-35 are pending currently.

**(4) Status of Amendments After Final**

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

**(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

**(8) Evidence Relied Upon**

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-11, 19-29, 32, and 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by W. O. 02/057772 (MORETON).

Instant claim 1 recites an indicating desiccant for indicating relative humidity at below 20% by a color change comprising a silica-based material provided with, as the active indicator system, a source of iron (Fe) and a source of bromide (Br); wherein the desiccant is essentially copper-free or has an amount of copper less than 0.002% by weight with respect to the silica-based material. MORETON discloses an indicating desiccant comprised of copper and bromide sources, and iron (III) salts as a colored material, and that the silica-based material has been impregnated with a source of copper, a source of bromide, and a dye or colored material such as iron (III) salts (lines 18-34 of page 3). MORETON discloses a general purpose indicating desiccant functioning below about 30% and showing a marked color change in lines 9-12 of page 3, and discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant.

Instant claim 4 recites .the source of iron is present in an amount up to 2.0% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 5 recites the source of iron is present in an amount of up to 1.0% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 6 recites the source of iron is present in an amount of up to 0.6% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

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Instant claim 7 recites the source of iron is present in an amount of up to 0.45% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 8 recites the source of iron is present in an amount of at least 0.01% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 9 recites the source of iron is present in an amount of at least 0.02% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 10 recites the source of iron is present in an amount of 0.02 to 1.0% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

Instant claim 11 recites the source of iron is present in an amount of 0.05 to 0.3% by weight, calculated as Fe with respect to weight of the anhydrous silica-based material.

MORETON discloses a preferable range between 0.01 and 2.0 percent by weight of the silica-based material for transition metal salts such as salts containing iron in lines 4-11 of page 4.

Instant claim 19 recites the bromide source comprises a water-soluble salt.

Instant claim 20 recites the bromide source is selected from one or more of the group consisting of alkali metal bromides, alkaline earth metal bromides, transition metal

bromides and ammonium bromide. Instant claim 21 recites the bromide source is

selected from one or more of the group consisting of sodium bromide, potassium

bromide, calcium bromide, magnesium bromide, zinc bromide and ammonium bromide.

MORETON discloses the use of water-soluble bromide and ammonium bromide in lines 29-36 of page 2.

Instant claim 22 recites the source of iron is an iron (III) salt or salts. Instant claim 23 recites the iron source is provided by one or more salts selected from the group consisting of iron (II) sulphate, iron (III) chloride, iron (III) nitrate, iron (III) sulphate, ammonium iron (II) sulphate, ammonium iron (III) sulphate and potassium iron (III) sulphate. MORETON discloses the use of iron salts and particular iron salts such as iron (III) sulphate, ammonium iron (II) sulphate, ammonium iron (III) sulphate and potassium iron (III) sulphate in line 34 of page 3 to line 7 of page 4.

Instant claim 24 recites the silica- based material is silica gel. Instant claim 25 recites the silica gel is a beaded silica gel. Instant claim 26 recites the silica gel is a granular silica gel. MORETON discloses the silica gel limitations in lines 13-17 of page 2.

Instant claim 27 recites the silica gel is a dry or humidified gel. MORETON discloses the use of humidified gel in line 22 of page 4.

Instant claim 28 recites the silica gel has a pore volume to nitrogen in the range 0.2 to 2.0 cm<sup>3</sup>g<sup>-1</sup> and a BET surface area in the range 200 to 1500 m<sup>2</sup>g<sup>-1</sup>. MORETON discloses this limitation in lines 18-21 of page 2.

Instant claim 29 recites a method of preparing an indicating desiccant comprising impregnating a silica-based material with a source of iron and a source of bromide to produce an essentially copper-free product in which the iron and bromide are the active indicators. MORETON disclose in lines 13-18 of page 4 a method of impregnating a silica-based material with copper, bromide, and optionally a dye or colored material that can be an iron salt as described in lines 4-7 of page 4.

Instant claim 32 recites the gel is soaked in solution for a period in the range of 2 to 24 hours. MORETON discloses this limitation in line 8 of page 5.

Instant claim 34 recites the desiccant is essentially copper-free. Instant claim 35 recites the copper is present in an amount less than 0.002% by weight with respect to the anhydrous silica-based material. MORETON discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 4-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over W. O. 02/057772 (MORETON).



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Instant claim 1 recites an indicating desiccant for indicating relative humidity at below 20% by a color change comprising a silica-based material provided with, as the active indicator system, a source of iron (Fe) and a source of bromide (Br); wherein the desiccant is essentially copper-free or has an amount of copper less than 0.002% by weight with respect to the silica-based material. MORETON discloses an indicating desiccant comprised of copper and bromide sources, and iron (III) salts as a colored material, and that the silica-based material has been impregnated with a source of copper, a source of bromide, and a dye or colored material such as iron (III) salts (lines 18-34 of page 3). MORETON discloses a general purpose indicating desiccant functioning below about 30% and showing a marked color change in lines 9-12 of page 3, and discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant.

As previously stated above, MORETON discloses a general purpose indicating desiccant functioning below about 30% and discloses and the use of up to 0.5 percent by weight of copper in a silica-based material used in a desiccant. Since MORETON is from the same field of silica-based desiccant as the current instant application, it would have been obvious to one of ordinary skill in the art to apply the indicating desiccant of MORETON similarly as the indicating desiccant of the current instant application since the indication of 20% relative humidity via color change, and less than 0.002% by weight of copper present is expressly encompassed by MORETON – see above.

Instant claims 4-28 and 34-35 are dependent on previously rejected instant claim 1, and therefore rejected as well.

Instant claim 12 recites the bromine content is equal to or greater than the amount of iron. Instant claim 13 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is at least 0.1:1. Instant claim 14 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is at least 0.5:1. Instant claim 15 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is at least 1:1. Instant claim 16 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is up to 100:1. Instant claim 17 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is up to 50:1. Instant claim 18 recites the source of bromide is present in an amount such that the weight ratio of Br to Fe is up to 20:1. MORETON discloses in lines 4-11 of page 4 the range of 0.01 to 2.0 percent by weight of a silica-based material for transition metal salts used, in particular iron salts. MORETON discloses that source of copper is up to 0.5 percent by weight of a silica-based material in line 24 of page 2. MORETON discloses that source of bromide is dictated by the amount of copper present in lines 37-38 of page 2, and is based on ratios between bromide and copper such as 5:1 and 2000:1 (line 38, page 2 to lines 1, page 3). MORETON meets these limitations in view of the relationships between the amount of transition metal salts used and the ratio between bromide and copper.

Instant claim 29 recites a method of preparing an indicating desiccant comprising impregnating a silica-based material with a source of iron and a source of bromide to produce an essentially copper-free product in which the iron and bromide are the active

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indicators. MORETON disclose in lines 13-18 of page 4 a method of impregnating a silica-based material with copper, bromide, and optionally a dye or colored material that can be an iron salt as described in lines 4-7 of page 4.

Instant claim 30 recites the source of iron is present in an amount up to 2.0 percent by weight, calculated as Fe with respect to weight of the anhydrous silica-based material, and the source of bromide in an amount such that the weight ratio of Br to Fe is at least 0.1:1. MORETON discloses that source of copper is up to 0.5 percent by weight of a silica-based material in line 24 of page 2. MORETON discloses that source of bromide is dictated by the amount of copper present in lines 37-38 of page 2, and is based on ratios between bromide and copper such as 5:1 and 2000:1 (line 38, page 2 to lines 1, page 3). MORETON meets this limitation in view of the relationships between the amount of transition metal salts used and the ratio between bromide and copper.

Instant claim 31 recites a humidified silica gel containing from 20 to 30% water weight is soaked in a solution containing between 0.1% and the saturation point of an iron salt and a source of bromide, excess solution is drained from the treated silica gel and the silica gel is dried at a temperature in the range 80°C to 230°C. MORETON discloses in lines 7-29 of page 5 of a method of impregnating a humidified silica gel with copper, bromide, and an optional dye that MORETON discloses in line 35 of page 3 to line 7 of page 4 can be substituted with a suitable colored material such as an iron salt.

Instant claim 32 recites the gel is soaked in solution for a period in the range of 2 to 24 hours. MORETON discloses this limitation in line 8 of page 5.

Instant claim 33 recites impregnation is effected by mixing a humidified silica gel containing from 15 to 30 percent moisture by weight with a solution containing a source of iron and a source of bromide, the amount of solution used being just sufficient to produce the required loading of iron and bromide on the silica gel, and subsequently drying the treated silica gel at a temperature in the range 80°C to 230°C. MORETON discloses in lines 7-29 of page 5 of a method of impregnating a humidified silica gel with copper, bromide, and an optional dye that MORETON discloses in line 35 of page 3 to line 7 of page 4 can be substituted with a suitable colored material such as an iron salt.

#### **(10) Response to Argument**

Appellant states in p. 6-16 of the Arguments of the Appeal Brief filed 28 July 2010 – expressly stated in the "Conclusion" on p. 16 – that , “The ‘772 publication (MORETON) does not teach or suggest an essentially copper-free desiccant or a desiccant that includes less than 0.002% by weight.” As previously disclosed, MORETON expressly discloses the use of up to 0.5 percent by weight of copper in a silica-based material (line 26 of page 3) used in a desiccant. Furthermore, MORETON discloses having an amount of copper less than 0.01 per cent by weight of a silica-based material used in a desiccant in lines 7-9 of page 3.

Appellant states in p. 6-16 of the Arguments of the Appeal Brief filed 28 July 2010 - expressly stated in the "Conclusion" on p. 16 - that, “The ‘772 publication does not suggest use of an iron-based system...” As previously disclosed, MORETON expressly discloses a preferable range between 0.01 and 2.0 percent by weight of the

silica-based material for transition metal salts such as salts containing iron in lines 4-11 of page 4.

Appellant states in p. 6-16 of the Arguments of the Appeal Brief filed 28 July 2010 - expressly stated in the "Conclusion" on p. 16 - that, "The '772 publication does not teach separate sources of iron and bromide." As previously disclosed, MORETON disclose in lines 13-18 of page 4 a method of impregnating a silica-based desiccant material with copper, bromide, and optionally a dye or colored material that can be an iron salt as described in lines 4-7 of page 4. Furthermore, Appellant's language that the iron and bromide sources are "separate" is not recited in instant claim 23 on p. 21 of the Appeal Brief filed 28 July 2010.

Appellant states in p. 6-16 of the Arguments of the Appeal Brief filed 28 July 2010 - expressly stated in the "Conclusion" on p. 16 - that, "... nothing in the '772 publication teaches that a color change should occur at relative humidity below 20%, or even that such a thing would be desirable." As previously disclosed, MORETON discloses a general purpose indicating desiccant functioning below about 30% and showing a marked color change in lines 9-12 of page 3. Furthermore, MORETON goes on to discloses in lines 15-17 of page 3 that, "For some desiccant applications a different equilibrium relative humidity may be preferred, in which case other ratios of Br to Cu may be more appropriate if they result in a colour change at a different relative humidity;" therefore, MORETON discloses a silica-based desiccant material that can comprise varying amounts of copper, bromide, and optionally a dye or colored material

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that can be an iron salt, wherein the desiccant can function below about 30% and show a marked color change.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/BRYAN T KILPATRICK/  
Examiner, Art Unit 1797

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797

Conferees:

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